

# RAC1 Antibody

Purified Mouse Monoclonal Antibody (Mab)

Catalog # AM8434b

## Product Information

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<b>Application</b>	WB, IHC-P, FC, E
<b>Primary Accession</b>	<a href="#">P63000</a>
<b>Reactivity</b>	Human, Rat, Mouse
<b>Host</b>	Mouse
<b>Clonality</b>	Monoclonal
<b>Isotype</b>	IgG2b
<b>Clone Names</b>	1301CT276.121.104
<b>Calculated MW</b>	21450

## Additional Information

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<b>Gene ID</b>	5879
<b>Other Names</b>	Ras-related C3 botulinum toxin substrate 1, Cell migration-inducing gene 5 protein, Ras-like protein TC25, p21-Rac1, RAC1, TC25
<b>Target/Specificity</b>	This antibody is generated from a mouse immunized with a KLH conjugated synthetic peptide between amino acids from human.
<b>Dilution</b>	WB~~1:1000 IHC-P~~1:100~500 FC~~1:100 E~~Use at an assay dependent concentration.
<b>Format</b>	Purified monoclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein G column, followed by dialysis against PBS.
<b>Storage</b>	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
<b>Precautions</b>	RAC1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

## Protein Information

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<b>Name</b>	RAC1 ( <a href="#">HGNC:9801</a> )
<b>Synonyms</b>	TC25
<b>Function</b>	Plasma membrane-associated small GTPase which cycles between active GTP-bound and inactive GDP-bound states. In its active state, binds to a variety of effector proteins to regulate cellular responses such as secretory

processes, phagocytosis of apoptotic cells, epithelial cell polarization, neurons adhesion, migration and differentiation, and growth-factor induced formation of membrane ruffles (PubMed:[1643658](#), PubMed:[22843693](#), PubMed:[23512198](#), PubMed:[28886345](#)). Rac1 p21/rho GDI heterodimer is the active component of the cytosolic factor sigma 1, which is involved in stimulation of the NADPH oxidase activity in macrophages. Essential for the SPATA13- mediated regulation of cell migration and adhesion assembly and disassembly. Stimulates PKN2 kinase activity (PubMed:[9121475](#)). In concert with RAB7A, plays a role in regulating the formation of RBs (ruffled borders) in osteoclasts (PubMed:[1643658](#)). In podocytes, promotes nuclear shuttling of NR3C2; this modulation is required for a proper kidney functioning. Required for atypical chemokine receptor ACKR2-induced LIMK1-PAK1-dependent phosphorylation of cofilin (CFL1) and for up-regulation of ACKR2 from endosomal compartment to cell membrane, increasing its efficiency in chemokine uptake and degradation. In neurons, is involved in dendritic spine formation and synaptic plasticity (By similarity). In hippocampal neurons, involved in spine morphogenesis and synapse formation, through local activation at synapses by guanine nucleotide exchange factors (GEFs), such as ARHGEF6/ARHGEF7/PIX (PubMed:[12695502](#)). In synapses, seems to mediate the regulation of F-actin cluster formation performed by SHANK3. In neurons, plays a crucial role in regulating GABA(A) receptor synaptic stability and hence GABAergic inhibitory synaptic transmission through its role in PAK1 activation and eventually F-actin stabilization (By similarity). Required for DSG3 translocation to cell-cell junctions, DSG3-mediated organization of cortical F-actin bundles and anchoring of actin at cell junctions; via interaction with DSG3 (PubMed:[22796473](#)). Subunit of the phagocyte NADPH oxidase complex that mediates the transfer of electrons from cytosolic NADPH to O<sub>2</sub> to produce the superoxide anion (O<sub>2</sub><sup>-</sup>) (PubMed:[38355798](#)).

#### Cellular Location

Cell membrane; Lipid-anchor; Cytoplasmic side. Melanosome. Cytoplasm. Cell projection, lamellipodium {ECO:0000250 | UniProtKB:P63001}. Cell projection, dendrite {ECO:0000250 | UniProtKB:P63001}. Synapse {ECO:0000250 | UniProtKB:Q6RUV5} Nucleus. Note=Inner surface of plasma membrane possibly with attachment requiring prenylation of the C- terminal cysteine (PubMed:1903399). Identified by mass spectrometry in melanosome fractions from stage I to stage IV (PubMed:17081065). Found in the ruffled border (a late endosomal-like compartment in the plasma membrane) of bone-resorbing osteoclasts. Localizes to the lamellipodium in a SH3RF1-dependent manner (By similarity). In macrophages, cytoplasmic location increases upon CSF1 stimulation (By similarity) Activation by GTP-binding promotes nuclear localization (PubMed:12551911). {ECO:0000250 | UniProtKB:P63001, ECO:0000250 | UniProtKB:Q6RUV5, ECO:0000269 | PubMed:12551911, ECO:0000269 | PubMed:17081065, ECO:0000269 | PubMed:1903399}

#### Tissue Location

Isoform B is predominantly identified in skin and epithelial tissues from the intestinal tract. Its expression is elevated in colorectal tumors at various stages of neoplastic progression, as compared to their respective adjacent tissues

## Background

Plasma membrane-associated small GTPase which cycles between active GTP-bound and inactive GDP-bound states. In its active state, binds to a variety of effector proteins to regulate cellular responses such as secretory processes, phagocytosis of apoptotic cells, epithelial cell polarization and growth-factor induced formation of membrane ruffles. Rac1 p21/rho GDI heterodimer is the active component of the cytosolic factor sigma 1, which is involved in stimulation of the NADPH oxidase activity in macrophages. Essential for the SPATA13-mediated regulation of cell migration and adhesion assembly and disassembly. Stimulates PKN2 kinase activity. In concert with RAB7A, plays a role in regulating the formation of RBs

(ruffled borders) in osteoclasts. In glioma cells, promotes cell migration and invasion. In podocytes, promotes nuclear shuttling of NR3C2; this modulation is required for a proper kidney functioning. Required for atypical chemokine receptor ACKR2-induced LIMK1-PAK1-dependent phosphorylation of cofilin (CFL1) and for up-regulation of ACKR2 from endosomal compartment to cell membrane, increasing its efficiency in chemokine uptake and degradation. In synapses, seems to mediate the regulation of F-actin cluster formation performed by SHANK3.

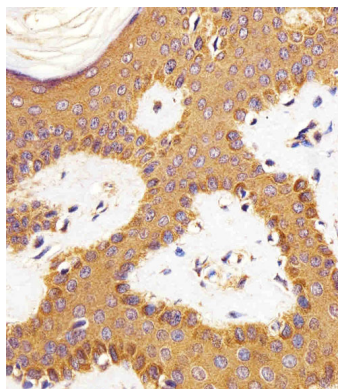
## References

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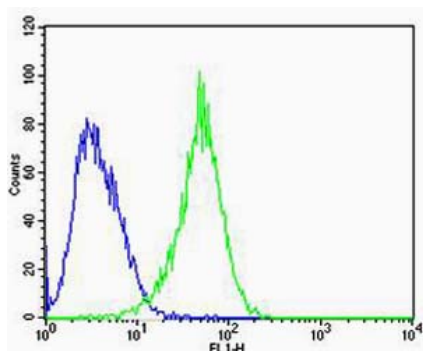
Didsbury J., et al. *J. Biol. Chem.* 264:16378-16382(1989).  
Drivas G.T., et al. *Mol. Cell. Biol.* 10:1793-1798(1990).  
Matos P., et al. *Biochem. Biophys. Res. Commun.* 277:741-751(2000).  
Jordan P., et al. *Oncogene* 18:6835-6839(1999).  
Schnelzer A., et al. Submitted (MAR-1999) to the EMBL/GenBank/DDBJ databases.

## Images

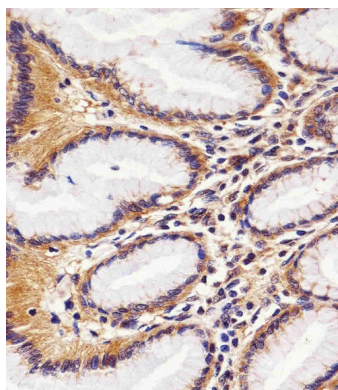
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Immunohistochemical analysis of paraffin-embedded H. skin section using RAC1 (Cat#AM8434b). AM8434b was diluted at 1:25 dilution. A peroxidase-conjugated goat anti-mouse IgG at 1:400 dilution was used as the secondary antibody, followed by DAB staining.

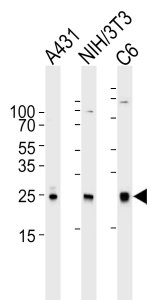


Flow cytometric analysis of U-87 MG cells using RAC1 (green, Cat#AM8434b) compared to an isotype control of mouse IgG2b (blue). AP20600c was diluted at 1:100 dilution. An Alexa Fluor® 488 goat anti-mouse IgG at 1:400 dilution was used as the secondary antibody.



Immunohistochemical analysis of paraffin-embedded H. stomach section using RAC1 (Cat#AM8434b). AM8434b was diluted at 1:25 dilution. A peroxidase-conjugated goat anti-mouse IgG at 1:400 dilution was used as the secondary antibody, followed by DAB staining.

Western blot analysis of lysates from A431, mouse NIH/3T3, rat C6 cell line (from left to right), using RAC1



Antibody(Cat. #AM8434b). AM8434b was diluted at 1:1000 at each lane. A goat anti-mouse IgG H&L(HRP) at 1:3000 dilution was used as the secondary antibody. Lysates at 35µg per lane.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.